VSB – Technical University of Ostrava
Faculty of Electrical Engineering and Computer Science
Department of Cybernetics and Biomedical Engineering

Diploma Thesis Assignment

Student: **Bc. Richard Konupka**

Study Programme: N0714A150001 Control and Information Systems

Title: Control Module of Universal Car Gateway
Řídící modul pro univerzální automobilovou sběrnicovou bránu

The thesis language: English

Description:

There is a large number of communication buses and protocols used in the automotive industry nowadays. The most common communication bus is the CAN bus. The goal of this master's thesis is to develop the control module of the universal car gateway. The universal car gateway is the device for message modification, filtration, and transfer between different types of communication buses or between the same type of communication buses. The control module of the universal car gateway enables the communication on the bus as well as ensures the core functionality of the Gateway, for example the filtering and rules for manipulation with the signals of the individual buses. The content of this master's thesis is the selection of proper hardware and development of the software for the control module of the universal car gateway.

Guidelines:
1. Survey and selection of the proper HW platform for enabling the communication on the bus.
2. Introduction to the CAN communication protocol.
3. Creation of requirements specification for the functionality of the control module of the universal car gateway.
4. Design of the SW for handling the messages and signals on the bus according to the created requirements.
5. Software implementation on the selected platform.
6. Communication implementation between the control module and the configuration module of the universal car gateway.
7. Functional verification of the SW.
8. Conclusion of the final thesis and further possibilities of development.

References:

[1] LAWRENZ, Wolfhard. *CAN System Engineering: From Theory to Practical Applications.* 2.vyd. Springer Publishing Company, 2013. ISBN 978-1-4471-5612-3.
[2] PARET, Dominique. *Multiplexed Networks for Embedded Systems: CAN, LIN, FlexRay, Safe-by-Wire.* Society of Automotive Engineers, 2014. ISBN 978-0768019384.
[3] ARTAL, J. S., J. CARABALLO and R. DUFO. CAN/LIN-Bus protocol. Implementation of a low-cost serial communication network. In: *2014 XI Tecnologias Aplicadas a la Ensenanza de la Electronica (Technologies Applied to Electronics Teaching) (TAEE)*. Bilbao: IEEE, 2014. pp. 1-8. DOI: 10.1109 /TAEE.2014.6900168. Electronic ISBN: 978-1-4799-6002-6.

Extent and terms of a thesis are specified in directions for its elaboration that are opened to the public on the web sites of the faculty.

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